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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/636,814	08/10/2000	David J. Edlund	NPW 307	7039

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EXAMINER
RIDLEY, BASIA ANNA

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

4D

Office Action Summary	Application No.	Applicant(s)	
	09/636,814	EDLUND ET AL.	
	Examiner	Art Unit	
	Basia Ridley	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *5,7 and 8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6 and 9-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 August 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

- the disclosure includes references to U.S. Patent Applications (see P4/L10 and P6/L3); the disclosure should be amended to include current status of all referenced applications;

- inconsistent numbering of elements, e.g. "heating assembly 63" (P15/L15) and "heating assembly 67" (throughout the specification).

Appropriate correction is required. Applicant is reminded that no new matter shall be added.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: e.g. "14" in Fig. 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "63" in Fig. 6 and "67" in Fig. 3 & 4 have both been used to designate assembly. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 6, 10, 13-17, 21-22, 24-28 and 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Swenson et al. (USP 5,409,046).

Regarding claim 1, Swenson et al. discloses a fuel processing system comprising:

- a volatile feedstock delivery system (Fig. 3) comprising:
- a plurality of heated reservoirs (74, 75) adapted to receive and store under pressure a

volume of a volatile carbon-containing feedstock;

- a delivery system adapted to selectively deliver an output stream containing feedstock from a selected one of the reservoirs (C5/L49-C6/L40); and

- a heating assembly (82, 83) adapted to heat the plurality of reservoirs (74, 75);

- a fuel processor adapted to receive the output stream and to produce a product stream therefrom (C1/L11-42).

While the reference does not explicitly disclose the fuel processor producing a product stream containing hydrogen gas from the output stream, at least some hydrogen will, inherently, be produced by the disclosed fuel processor.

Regarding claims 2-4, 6, 10 and 13-17, Swenson et al. discloses a fuel processing system wherein:

- the heating assembly is adapted to heat the reservoir by heat exchange with a heated fluid stream (C5/L22-34);

- the heating assembly is adapted to selectively apportion the heated fluid stream between the plurality of reservoirs (C5/L22-34);

- the heating assembly is adapted to is adapted to selectively apportion the heated fluid stream between the plurality of reservoirs to control the pressure of the volatile carbon containing feedstock in the reservoirs (C5/L22-36);

- the heating assembly includes a burner adapted to produce an exhaust stream, and further wherein the heating assembly is adapted to heat the reservoirs through heat exchange with the exhaust stream from the burner (C5/L22-36);

- further including a supply assembly adapted to selectively deliver the volatile carbon-containing feedstock to the plurality of reservoirs (C6/L28-40);

- further including a supply assembly adapted to deliver the volatile carbon-containing feedstock to the reservoirs (C6/L28-40);

- wherein the supply assembly includes a supply reservoir (71) adapted to store a volume of the volatile feedstock for selective delivery to the plurality of reservoirs (74, 75);

- further including a control system adapted to control the pressure of the feedstock in the reservoirs (C5/L22-C6/L40);

- wherein the control system is adapted to control the operation of the heating assembly (C5/L22-C6/L40);

- wherein the control system is adapted to control the reservoir from which the delivery system draws the output stream (C5/L22-C6/L40).

Regarding claim 21, Swenson et al. discloses a fuel processing system comprising:

- a fuel processor adapted to produce a product stream from a feedstock (C1/L11-42)

- a feed assembly (Fig. 3) adapted to deliver the feedstock at a selected pressure to the fuel processor, wherein the feed assembly includes a volatile feedstock feed system comprising:

- a plurality of heated reservoirs (74, 75) adapted to receive and store under pressure a volume of a volatile carbon-containing feedstock;

- a delivery system including a delivery valve assembly adapted to selectively deliver a feed stream containing the feedstock from a selected one of the reservoirs at a pressure at least as great as the selected pressure (C5/L22-C6/L40); and

- a heating assembly (82, 83) adapted to selectively heat the plurality of reservoirs (74,

75) to maintain the pressure of the feedstock at or above the selected pressure (C5/L22-C6/L40).

While the reference does not explicitly disclose the fuel processor producing a product stream containing hydrogen gas from the output stream, at least some hydrogen will, inherently, be produced by the disclosed fuel processor.

Regarding claims 22 and 24-28 and 30-31, Swenson et al. discloses a fuel processing system wherein:

- the supply and delivery valve assemblies are adapted to selectively deliver volatile carbon containing feedstock from one of the reservoirs while supplying volatile feedstock to another of the reservoirs (C6/L28-40);
- further including a control system adapted to control the pressure of the feedstock in the feed system (C5/L22-C6/L53);
- wherein the control system is adapted to control the operation of the heating assembly to control the temperature of the reservoirs (C5/L22-C6/L53);
- wherein the control system is adapted to control the operation of the supply system to control the volume of the feedstock in the reservoirs (C5/L22-C6/L53);
- wherein the control system is adapted to control the operation of the delivery system to control the delivery of the feed system (C5/L22-C6/L53);
- wherein the control system includes a controller in communication with a sensor assembly (C5/L22-C6/L53);
- wherein the sensor assembly includes level sensors adapted to measure the volume of the feedstock in the reservoirs (C5/L22-C6/L53);
- wherein the sensor assembly includes pressure sensors adapted to measure the

pressure of the feedstock in the reservoirs (C5/L22-C6/L53).

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Swenson et al. (USP 5,409,046), as applied to claim 1 above, in view of Mitchell et al. (USP 2,551,501).

Regarding claim 9, Swenson et al. discloses all of the claim limitations as set forth above, but the reference does not explicitly disclose specific structure of the reservoir used for vaporization of the fuel gas.

Mitchell et al. in Fig. 4 teaches that it is conventional to use reservoirs including a shell at least partially surrounding the reservoir and spaced apart from that reservoir to define a cavity, wherein the heating assembly is adapted to heat the reservoir by delivering a heated fluid stream to the cavity for vaporization of fuel gas. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use reservoir including a shell at least partially surrounding the reservoir and spaced apart from that reservoir to define a cavity, wherein the heating assembly is adapted to heat the reservoir by delivering a heated fluid stream to the cavity for vaporization of fuel gas in the system of Swenson et al., because it would amount to nothing more than a use of a known apparatus for its intended use in a known environment to accomplish entirely expected result.

8. Claims 11-12 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swenson et al. (USP 5,409,046), as applied to claim 10 and 28, respectively.

Regarding claims 11-12, while embodiment disclosed in Fig. 3 of Swenson et al. does not explicitly disclose the supply assembly including a vent assembly in communication with each of the plurality of reservoirs wherein the vent assembly is adapted to selectively vent the corresponding reservoir when the supply assembly delivers the volatile carbon containing feedstock to the reservoir and is disposed to prevent venting at other times, another embodiment of said reference teaches that said vent assembly should be included and used while vessels are filled with LNG (C9/L39-61). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to include disclosed vent assembly in the embodiment disclosed in Fig. 3 of Swenson et al. for the purpose of ensuring safe operation of said system.

Regarding claim 29, Swenson et al. does not explicitly disclose the sensor assembly includes temperature sensors adapted to measure the temperature in the reservoirs. But, as the reference disclose that it is desired to control the temperature of gas being supplied from the reservoirs (C6/L10-16) it would have been obvious to one having ordinary skill in the art at the time of the invention to include said temperature sensor as doing so would amount to nothing more than use of a known apparatus for its intended use in a known environment to accomplish entirely expected result.

9. Claims 18-20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swenson et al. (USP 5,409,046), as applied to claims 1 and 21 above, in view of Verrill et al. (USP 5,938,800).

Regarding claims 18-20 and 23, Swenson et al. discloses all of the claim limitations as set forth above, but the reference does not explicitly disclose said system further comprising a separation region adapted to increase the purity of hydrogen in the

product stream via a pressure driven separation process, wherein the fuel processor is further adapted to receive water and to produce the product stream from the water and the output stream via a steam reforming reaction, and further comprising a fuel cell stack.

Verrill et al. teaches that it is desirable to replace conventional combustion engine on board of vehicles with a fuel processor comprising a separation region adapted to increase the purity of hydrogen in the product stream via a pressure driven separation process, wherein the fuel processor is further adapted to receive water and to produce the product stream from the water and the output stream via a steam reforming reaction, and a fuel cell stack for the purpose of providing cleaner and quieter system (C3/L10-67). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the supply system of Swenson et al. to supply fuel gas to the vehicles comprising fuel processor and fuel cell of Verrill et al. for the purpose of providing environmentally friendly and quiet system.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-4, 6 and 9-31 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-66 of U.S. Patent No. 6,375,906.

Claims 1-66 of U.S. Patent No. 6,375,906 recite all of the limitations as recited in claims 1-4, 6 and 9-31 of the instant application. With regard to claim 1 and 21, addition of a backup system for use during emergency shutdown or repair of the system, the backup system including a backup reservoirs, would have been obvious. Mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 124 USPQ 378, 380 (CCPA 1960). Further, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

13. Claims 1-4, 6 and 9-31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-50 of copending Application No. 10/126,557. Although the conflicting claims are not

identical, they are not patentably distinct from each other because claims 1-50 of Application No. 10/126,recite all of the limitations as recited in claims 1-4, 6 and 9-31 of the instant application. With regard to claim 1 and 21, addition of a backup system for use during emergency shutdown or repair of the system, the backup system including a backup reservoirs, would have been obvious. Mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 124 USPQ 378, 380 (CCPA 1960). Further, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

14. Applicant's arguments filed on 22 November 2004 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. In view of the foregoing, none of the claims are allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

Basia Ridley
Examiner
Art Unit 1764

BR
February 22, 2005